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Adjustable metal beam

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COMPLETE SPECIFICATION

FOR A STANDARD PATENT

ORIGINAL

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Invention Title: Adjustable Metal Beam
IP Australia

The following statement is a full description of this invention, including the best method of performing it known to me/us

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The present invention relates to a lintel or verandal type beam of a kind, for example, suitable for supporting a garage door opening. Many forms of lintel or verandel beams are known. The present invention however is directed to a fabricated metal beam of such a type.

Where beams, whether of wood or metal, are manufactured to standard lengths because of on site requirements frequently it is necessary to provide provision for some adjustment from a standard length is required. The present invention is therefore directed to a fabricated metal beam useful as a lintel or verandel beam capable, within limits, of being adjusted as to its span.

In a first aspect the present invention consists in a **fabricated lintel or verandal beam** having at each end thereof mounting means (such as a mounting plate or bracket), the span between which can be adjusted telescopically.

In still a further aspect the present invention consists in a **fabricated metal lintel or verandal beam** of a kind having top and bottom chords linked by appropriate web or stanchion-like members, there being at at least one end a telescopic extension of the chord lengths whereby the effective span of the beam can be increased.

Preferably each end (including the telescopically extendable end) of the beam includes a mounting plate or the like.

Preferably said web or stanchion-like members are adapted to be substantially vertically positioned.

Preferably said beam takes a form substantially as hereinafter described with reference to any one or more of the accompanying drawings.

In still a further aspect the present invention consists in a beam of any of the aforementioned types.

Preferably there is provision to hold the relativity of the end against telescoping. Preferably said means includes a grub or other screw or the like member (eg a bolt).

In still a further aspect the present invention consists in **the use of a beam** in accordance with the present invention whereby a lintel or verandel beam assembly is formed.

Preferably said assembly includes a provision of timber plates top and bottom of the beam and/or timber supports for each end of the beam whether directly or indirectly through any such timber plate.

A preferred form of the present invention will now be described with reference to the accompanying drawings in which;

Figure 1A is a side elevation view of a preferred lintel beam formed of RHS box section steel, the top and bottom chords being of such steel as well as the vertical linking webs or stanchion-like members, the tubes that slide relative to the chord RHS

themselves preferably being RHS type sections of reduced size, and the end plates being of an appropriate steel plate with fixing openings,

Figure 1B is a similar view to that of **Figure 1A** showing the extension of the telescopically extendable end almost to the point of being withdrawn from the top and bottom RHS chords,

Figure 2 is a plan view of the arrangement of **Figure 1A**,

Figure 3 is a bottom view of the arrangement of **Figure 1A**,

Figure 4 is an end view AA with respect to the arrangement of **Figure 1A**,

Figure 5 is an end view BB with respect to the arrangement of **Figure 1A**,

Figure 6 is a perspective view of the arrangement of, for example **Figure 1A**,

Figure 7 shows a lintel assembly at a telescopic end showing in broken outlines the provision of supporting timber plates for each of the top and bottom chords of the fabricated steel beam,

Figure 8 is an elevational view of part of a fixing of the non-telescopic end of a lintel beam as depicted in **Figure 6**,

Figure 9 shows the opposite end to that of **Figure 8**, and

Figure 10 shows a sectional view in the direction CC with respect to **Figure 6**.

Figure 11 shows one preferred way in which the lintel beam may be installed within the frame work of a building structure or the like, the beam being bolted from both top and bottom timber plates and through the upper and lower cords of the beam, there also being an insulating material forward of the beam, and

Figure 12 shows a similar arrangement to that of **Figure 11**, however in this case the lintel beam has been installed towards to the outer side of the wall, in this instance the insulating material is positioned to be right of the beam.

In the preferred form of the present invention the fabricated beam comprises a top cord 1 and a bottom cord 2 each of RHS (Rectangular Hollow Section) steel linked by like tubular RHS sections 3 which serve the purpose of a web or stanchion between the top and bottom cords 1 and 2. The beam is preferably fabricated from steel or similar metallic material having a yield stress equal to or greater than 450 MPa (for example G450). All components of the beam are preferably galvanized so as to ensure resistance to corrosion.

The fixed end 4 of the lintel beam shown in **Figure 6** has welded thereto a mounting plate (or the like) 5 of an appropriate steel such as DuraGal™, such plate having fixing openings 6.

A like plate 7 is provided at the other end but that plate 7 is carried by tubular members (also of RHS) which are telescopically received within the tubes 1 and 2. Such tubes 1A and 2A are likewise welded to the plate 7.

In the preferred form the present invention the tubes 1A and 2A are marked at a predetermined point 17 along their length so as to indicate to persons installing the beam the ultimate extent to which the telescopic extension may be extended without jeopardising the load bearing capacity.

To prevent unwanted movement of the telescopic section 8 out of the tubes 1 and 2 (eg during transport) aligned openings or a series of aligned openings can be provided (not shown) through which, for example a grub screw or bolt (not shown) can be fitted, for example, at 9.

In use timber members 10 and 11 can be bolted by bolts 12 using the openings 6 of its plate or bracket 5 more or less along the lines shown in Figure 7 for the telescopic end 8. A top timber plate 13 and a bottom timber plate 14 can likewise form a part of the assembly and likewise can be bolted, for example using bolts 15 and 16, into position.

The lintel beam is preferably designed for the loads set out in New Zealand Standard NZS 4203:1992 for the following situations:

1. Maximum altitude Snow Zone 1 500m
 Snow Zone 2 400m
 Snow Zone 3 350m
 Snow Zone 4 100m
 Snow Zone 5 150m
2. Wind, basic non-directional wind speed 45m/sec. Terrain Catagory 3,
 Shielding Multiplier 1.0, Hill Shpae Multiplier 1.0 Structure risk
 Multiplier 1.0
3. Maximum roof weight is to be 0.45 kPa for light roof and 0.85 kPa for
 heavy roof, both include the ceiling lining.
4. Where used as a lintel, maximum supported span is to be 6.5 metres with
 a hip and girder not supporting more than 3.25m setback.

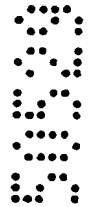
A person skilled in the art will appreciate how a proprietary lintel or verandal beam of the type depicted in Figure 6 can be provided. Such a beam without any trimming of either of the tubes 1 and 2 be used to provide a variety of different spans. If necessary there can be some trimming of tubes 1 or 2 which still allows the telescopic region 8 to be engaged therewith to provide a different range of spans.

WHAT WE CLAIM IS:

1. **A fabricated metal lintel or verandal beam** of a kind having top and bottom chords linked by appropriate web or stanchion-like members, there being at at least one end a telescopic extension of the chord lengths whereby the effective span of the beam can be increased.
2. A beam of claim 1 wherein each end (including the telescopically extendable end) of the beam includes a mounting plate or the like.
3. A beam of claim 1 or 2 wherein said web or stanchion-like members are adapted to be substantially vertically positioned.
4. A beam of claim 1 wherein said beam takes a form substantially as hereinafter described with reference to any one or more of the accompanying drawings.
5. A beam of claim 1 wherein there is provided along the length of said beam means to resist telescoping of said telescopic extension.
6. A beam of claim 5 wherein said means includes a grub or other screw or the like member (eg a bolt).
7. **The use of a beam** in accordance with the present invention whereby a lintel or verandal beam assembly is formed.
8. The use of a beam according to the preceeding claim 8 wherein said assembly includes a provision of timber plates top and bottom of the beam and/or timber supports for each end of the beam whether directly or indirectly through any such timber plate.
9. **A fabricated lintel or verandal beam** having at each end thereof mounting means, the span between which can be adjusted telescopically.
10. A beam of claim 9 wherein said mounting means comprises or includes a mounting plate or bracket.
10. **A lintel or verandal beam** as substantially herein described and with reference to to any one or more of the accompanying drawings.

ABSTRACT

A fabricated lintel or verandal beam having at each end thereof mounting means (such as a mounting plate or bracket), the span between which can be adjusted telescopically.



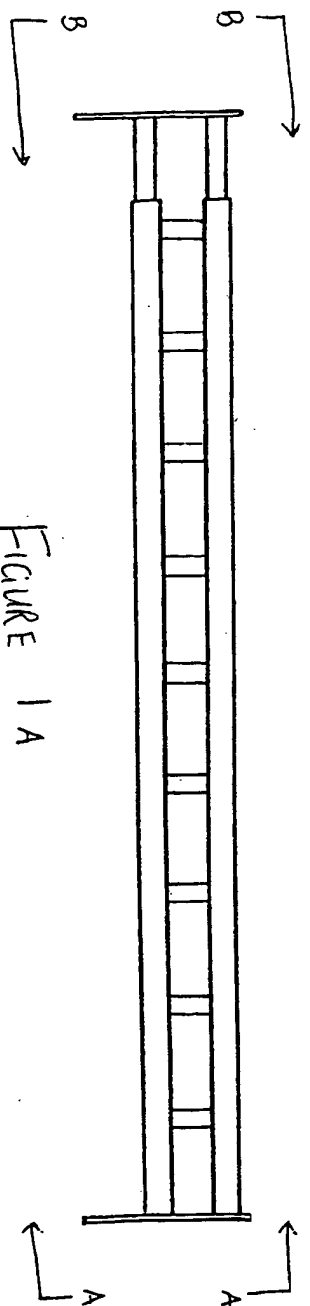


FIGURE 1A

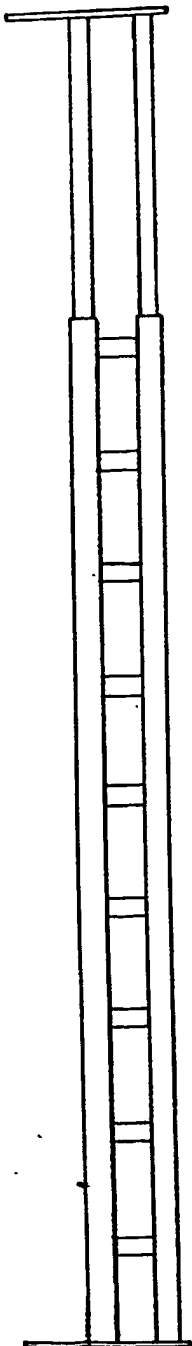


FIGURE 1B



FIGURE 2



FIGURE 3

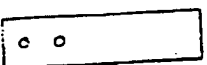


FIGURE 4

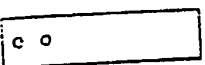
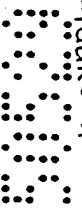


FIGURE 5



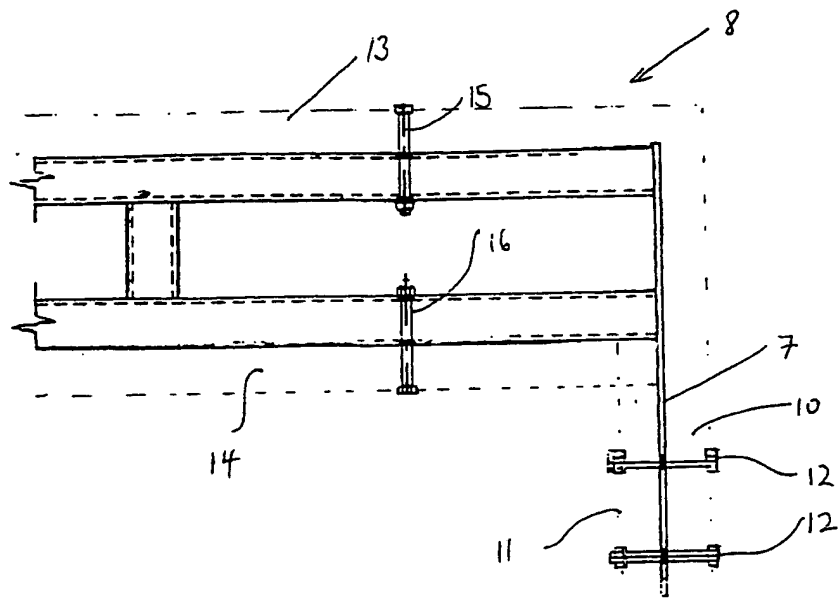


FIGURE 7

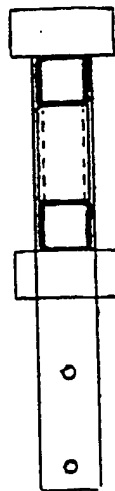
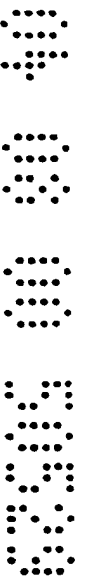


FIGURE 10



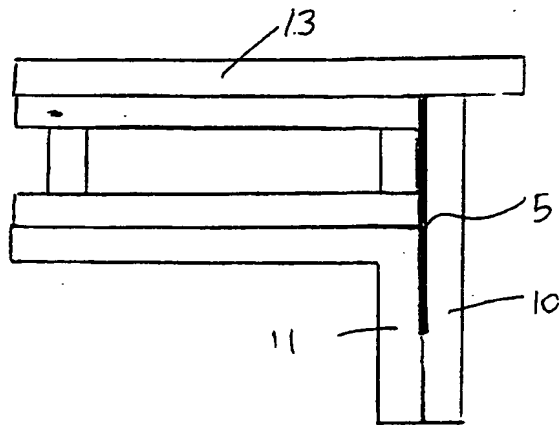


FIGURE 8

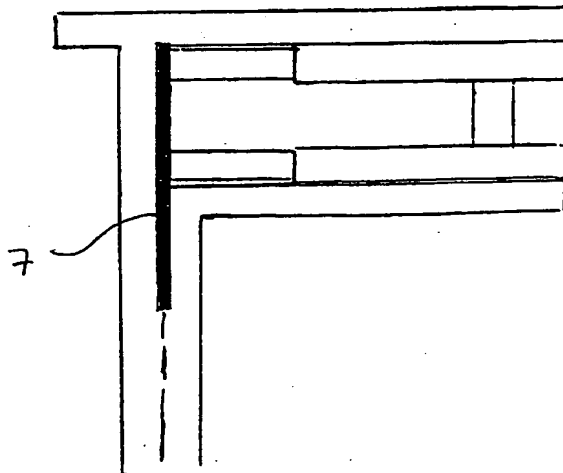
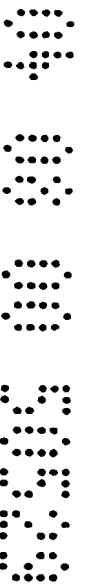


FIGURE 9



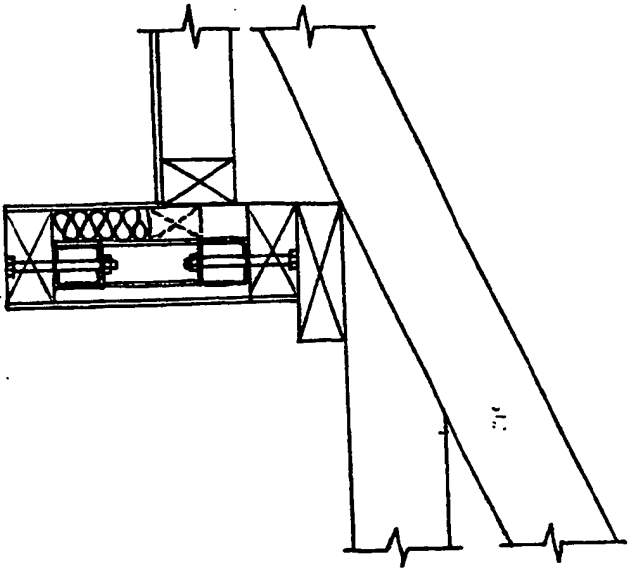


Figure 11

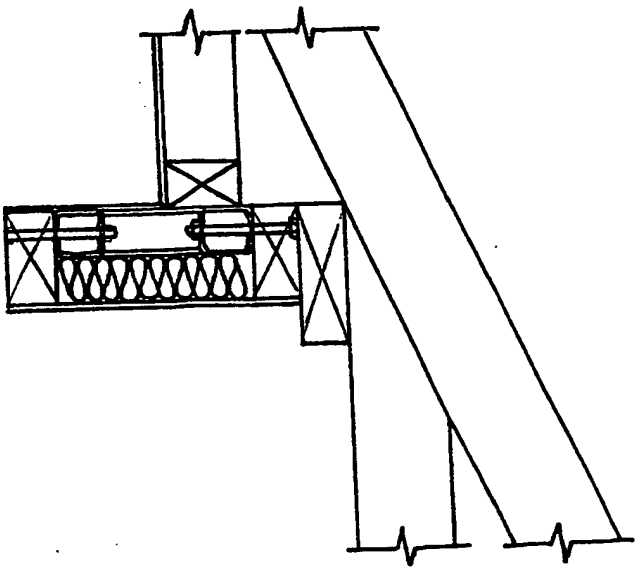


Figure 12

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